What is clamed is:

1. A method of moving a volume of a reaction mixture, comprising:

introducing a first volume of a first fluid into a first channel segment, the first fluid comprising an environmental control reagent; and

flowing a first volume of a second fluid into the first channel segment, the second fluid comprising the reaction mixture.

2. The method of claim 1, wherein the first volume of the first fluid is introduced into the first channel segment after the first volume of the second fluid is flowed through the first channel segment.

3. The method of claim 2, further comprising flowing a volume of a first volume of a third fluid through the first channel segment after the first fluid is flowed through the first channel segment.

4. The method of claim 1, wherein the second fluid comprises a first test compound.

5. The method of claim 4, wherein the second fluid comprises at least a first component of a biochemical system.

6. The method of claim 1, wherein the environmental reagent comprises a degassing fluid.

7. The method of claim 6, wherein the degassing fluid comprises a fluid that is not gas saturated.

8. The method of claim 6, wherein the degassing fluid comprises a fluid having less than 90% gas saturation.

9. The method of claim 6, wherein the degassing fluid comprises a fluid having less than 80% gas saturation.

10. The method of claim 6, wherein the degassing fluid comprises a fluid having less than 60% gas saturation.

11. The method of claim 6, wherein the degassing fluid comprises a fluid having less than 50% gas saturation.

12. The method of claim 6, further comprising degassing the first fluid immediately prior to the step of flowing the first volume of first fluid through the first channel segment.

13. The method of claim 12, wherein the degassing step comprises heating the first fluid.

14. The method of claim 12, wherein the degassing step comprises subjecting the first fluid to a negative pressure.

15. The method of claim 1, wherein the first fluid comprises a channel surface modifying reagent.

16. The method of claim 15, wherein the surface modifying reagent comprises a surface adsorbing polymer.

17. The method of claim 16, wherein the surface adsorbing polymer comprises a silica adsorbing polymer.

18. The method of claim 1, wherein the first fluid comprises a viscosity adjusting reagent.

19. The method of claim 1, wherein the first fluid comprises a complexing reagent.

20. The method of claim 1, wherein the first fluid comprises a reaction inhibiting reagent, and the second fluid comprises at least a first reactant.

21. The method of claim 20, wherein the reaction inhibiting reagent comprises an inhibitor of a reaction involving the at least first reactant.

22. The method of claim 21, wherein the first reactant comprises a first enzyme, and the inhibitor inhibits an action of the enzyme.

23. The method of claim 21, wherein the first reactant comprises a specific binding pair of reagents, and the inhibitor inhibits binding of a first member of the binding pair to the second member of the binding pair.

24. The method of claim 23, wherein the specific binding pair comprises one or more of an antibody/antigen pair, a complementary nucleic acid pair, a nucleic acid binding protein/nucleic acid pair, and a receptor/ligand pair.

25. A microscale channel, comprising:

a first fluid region disposed therein, the first fluid region comprising at least one environmental control reagent; and

a second fluid region disposed therein, the second fluid region comprising at least a first reactant.

26. The microscale channel of claim 25, wherein the first and second fluid regions are adjacent to each other within the first channel.

27. The microscale channel of claim 25, wherein the second fluid region is bounded on both sides within the channel by the first fluid.

28. The microscale channel of claim 25, wherein the second fluid comprises a first test compound.

29. The microscale channel of claim 28, wherein the second fluid comprises at least a first component of a biochemical system.

30. The microscale channel of claim 25, wherein the environmental reagent comprises a degassing fluid.

31. The microscale channel of claim 30, wherein the degassing fluid comprises a fluid that is not gas saturated.

32. The microscale channel of claim 30, wherein the degassing fluid comprises a fluid having less than 90% gas saturation.

33. The microscale channel of claim 30, wherein the degassing fluid comprises a fluid having less than 80% gas saturation.

34. The microscale channel of claim 30, wherein the degassing fluid comprises a fluid having less than 60% gas saturation.

35. The microscale channel of claim 30, wherein the degassing fluid comprises a fluid having less than 50% gas saturation.

36. The microscale channel of claim 25, wherein the first fluid comprises a channel surface modifying reagent.

37. The microscale channel of claim 36, wherein the surface modifying reagent comprises a surface adsorbing polymer.

38. The microscale channel of claim 37, wherein the surface adsorbing polymer comprises a silica adsorbing polymer.

39. The microscale channel of claim 25, wherein the first fluid comprises a viscosity adjusting reagent.

40. The microscale channel of claim 25, wherein the first fluid comprises a complexing reagent.

41. The microscale channel of claim 25, wherein the first fluid comprises a reaction inhibiting reagent, and the second fluid comprises at least a first reactant.

42. The microscale channel of claim 41, wherein the reaction inhibiting reagent comprises an inhibitor of a reaction involving the at least first reactant.

43. The microscale channel of claim 42, wherein the first reactant comprises a first enzyme, and the inhibitor inhibits an action of the enzyme.

44. The microscale channel of claim 42, wherein the first reactant comprises a specific binding pair of reagents, and the inhibitor inhibits binding of a first member of the binding pair to the second member of the binding pair.

45. The microscale channel of claim 44, wherein the specific binding pair comprises one or more of an antibody/antigen pair, a complementary nucleic acid pair, a nucleic acid binding protein/nucleic acid pair, and a receptor/ligand pair.

46. A method of preventing bubble formation in a fluid containing microchannel structure, comprising:

providing a first fluid in the first microchannel, the first fluid having a first dissolved gas concentration; and

maintaining the first fluid at a first temperature and pressure once the first fluid is introduced into the microchannel, the first temperature and pressure being sufficient to prevent bubble formation within the first fluid having the first dissolved gas concentration.

47. The method of claim 46, further comprising providing a second fluid having a second dissolved gas concentration within the first microscale channel, wherein the first temperature and pressure and the first dissolved gas concentration in the first fluid are sufficient to absorb sufficient gas from the second fluid in order to prevent bubble formation from the second fluid having the second dissolved gas concentration under the first temperature and pressure.

48. The method of claim 47, wherein the step of providing the first fluid in the first microchannel having a first dissolved gas concentration comprises elevating a temperature of the first fluid to a temperature greater than the first temperature prior to introducing the first fluid into the first microscale channel.

49. The method of claim 47, wherein the step of providing the first fluid in the first microchannel having a first dissolved gas concentration comprises subjecting the first fluid to a pressure lower than the first pressure prior to introducing the first fluid into the first microscale channel.

50. The method of claim 46, wherein the first fluid is heated to a temperature at least about 5°C higher than the first temperature, prior to introducing the first fluid into the first microchannel.

51. The method of claim 46, wherein the first microchannel has at least one cross-sectional dimension between 0.1 and 100 µm.

52. A method of preventing bubble formation in a fluid containing microchannel, comprising:

maintaining a first fluid at a first temperature prior to introducing the first fluid into the microchannel;

applying a vacuum to the first microchannel to draw the first fluid into the first microchannel; and

maintaining the first fluid at a second temperature once the first fluid is introduced into the microchannel, the second temperature being less than the first temperature.